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**Relations of Depressive Symptoms to Employment and Income Among  
Low-Income Adults**

**by**

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**Relations of Depressive Symptoms to Employment and Income Among  
Low-Income Adults**

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## **Abstract**

### **Relations of Depressive Symptoms to Employment and Income Among Low-Income Adults**

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The University of Texas at Austin, 2006

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Depression is experienced at a higher degree in poor, female, and under-employed persons, as compared to the general population. A very large number of poor mothers have entered the workforce since the welfare reform of 1996. Poor mental health can prevent these women from achieving economic self-sufficiency because it can affect their ability to find and retain jobs. This study analyses the New Hope data of working and non-working poor in a Midwestern city to find if predictive relations exist between depressive symptoms and employment and income outcomes across a three-year span. A bi-directional predictive relation is found between depressive symptoms and household income. Also, a higher number of hours worked predicts declines in depressive symptoms, and a lower level of depressive symptoms predicts less AFDC receipt three years later.

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## **Introduction**

Depression is experienced at a higher degree in poor, female, and under-employed persons, as compared to the general population. The shift from Aid to Families with Dependent Children (AFDC) to Temporary Assistance for Needy Families (TANF) regulations, brought on by 1996's Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), creates concern that the population facing welfare-to-work requirements will also face a high risk of depression.

The changes in federal welfare laws of 1996 ushered in a shift from a welfare system based mainly on cash outlays without time limits to one focused on employment and time limits. One major goal of this legislation was to move adults into the work force. In the ten years since the reform, the welfare rolls have dropped dramatically, and single mothers (the principal clients of the welfare system) entered the workforce and gained jobs that varied in quality, stability, and wages. PRWORA was based on the assumption that most welfare recipients could find and sustain employment, but some observers argued that mental health problems, including depressive symptoms, would pose a significant barrier to obtaining and sustaining employment. There is a large body of evidence showing that a substantial proportion of low-income single mothers suffer from high levels of depressive symptoms.

Poor mental health can be a barrier to economic success as it affects one's interpersonal skills with co-workers and clients and also saps the valuable energy needed to look for or maintain a job. Alternatively, spans of unemployment or time in an unrewarding position may lead to poorer psychological well-being, including symptoms of depression. As America's poor come into contact with the workforce, via job hunting

or employment, their mental health can affect how successfully they can achieve self-sufficiency and move out of poverty.

Leaving welfare and being employed may also improve an individual's psychological well-being, particularly if the individual and his/her family achieve additional income as a result. If employment yields earnings and other benefits (e.g., Earned Income Tax Credit), it might also raise overall income, which could in turn reduce stress and worry. Low-income individuals share to some extent the national value attached to work and the stigma attached to welfare. Therefore, paid employment might reduce depressive symptoms even if it did not significantly improve economic well-being.

The purpose of the study presented in this paper is to investigate the direction of effects in the relations of depressive symptoms to employment, earnings, income, and welfare receipt in a sample of low-income parents. There is ample evidence of correlations between psychological well-being and employment-related variables, but the causal relations are less clear. Using longitudinal data, two related questions are addressed: a) To what extent do depressive symptoms predict changes in employment, earnings, income, and welfare receipt over a 3-year period? b) To what extent do employment, earnings, income, and welfare receipt predict changes in depressive symptoms over a 3-year period? Of course, employment and psychological well-being could have a bi-directional causal relationship, and this study tests both potential causal pathways. The three-year period studied was 1997-2000, when public policies were moving many low-income parents into work.

## **THE YEARS SINCE WELFARE REFORM**

### **Drop in Rolls and Increase in Employment**

PROWRA shifted welfare funding accountability from the federal government, AFDC, to state-level block grants or TANF. TANF regulations include time-limits on welfare benefits and requirements that most clients work in order to receive benefits. Although PROWRA is dated 1996, many state governments implemented policies prior to 1996 in anticipation of the major reform. Welfare rolls across the country began to decline in the years prior to 1996. According to the U.S. Department of Health and Human Services, during the period from fiscal year 1994 to 1996, average monthly AFDC caseloads dropped nearly 14% (Administration for Children and Families [ACF], 1996). The declines accelerated to 34% between August 1996 and September 1998 (ACF, 2004, August 30; ACF, 2004, November 20). More recent data place the caseload decline from August 1996 to March 2001 at 50% (Acs & Loprest, 2001). Such dramatic declines are attributed to welfare reform combined with periodic U.S. economic growth that provided new job opportunities (Ziliak, Figlio, Davis, & Connolly, 2000).

### **Working Poor**

This change to America's welfare system redefined the conventional image of who is poor. Although people have increasingly left the welfare system for employment, they have not always transitioned out of poverty. A synthesis of 15 welfare leaver studies funded by the Office of the Assistant Secretary for Planning and Evaluation (ASPE) found that, on average, the families of welfare leavers face monthly incomes (from all sources) that generally reside near the poverty line (Acs & Loprest, 2001).

In the studies that included poverty rates, over half of the welfare leavers were poor, and the majority of leavers in two of these studies had incomes below 185% of the federal poverty line (Acs & Loprest, 2001). In another summary report of welfare-to-

work programs, welfare leavers, defined as people who leave welfare and stay off for at least a year, faced a poverty rate (non official) of 42.7% (Miller, 2002). Thus leaving welfare does not equate to leaving poverty behind.

The “working poor” are the class of people who look for or maintain employment but are unable to rise above the poverty level due to low wages, the costs of employment (such as child care or health insurance) and job instability. Specifically, according to the U.S. Department of Labor (2006), the working poor are those persons who spent at least 27 weeks in the labor force (working or looking for work) but whose incomes fell below the official poverty threshold. In 2004, about one in every five poor persons (7.8 million) was classified as working poor. Although one may assume the working poor are mainly part-time workers, 58% of the working poor who worked during 2004 usually worked full time. Among all workers who usually had full-time wage and salary jobs, 3.9% (4.6 million) lived as working poor in 2004 (U.S. Department of Labor).

Large numbers of single mothers joined the workforce and obtained jobs post welfare reform yet female heads of households were more than twice as likely as their male counterparts to be among the working poor (18.4% and 8.6%, respectively) (U.S. Department of Labor, 2006). At the family level, in 2004, 4.3 million families were classified as working poor. Of families with children under 18 and a female head of household, 23% experienced life as a working poor family (U.S. Department of Labor).

These data from the Department of Labor speak to a need to refocus attention on poverty from a welfare-based perspective to analyses of the working poor. While in the past, welfare recipients may have been seen as America’s poor, today’s poor are composed of a substantial number of working persons. Many of the non-welfare working poor do not have contact with the social service agencies of the welfare system and may face barriers such as mental health issues alone and under the radar.

## **Supports for Working People**

Experimental tests of welfare-to-work policies demonstrated that many individuals leaving welfare for work did not achieve much change in income; they exchanged welfare for low earnings (Michalopoulos, Schwartz, & Adams-Ciardullo, 2000). They would, however, be better off if they had such work supports as wage supplements, child care, and health care. A number of policies instituted or expanded a variety of work supports during the 1990s. The Earned Income Tax Credit (EITC) was expanded to increase the retained earnings of America's low-income workers. Low-income workers and families can gain additional income via the EITC on the basis of their earned income. In addition, the EITC is a refundable credit which means the credit available is independent of one's tax burden.

The EITC is today the largest single anti-poverty program for America's low-income working families. For instance, in 2003 the EITC totaled \$34.4 billion and was received by 19.3 million families. The average credit paid was \$1784 in 2003 as compared to only \$201 in 1975. The largest benefits are received by persons with qualifying children. In 2003, the maximum credit was \$4204 for families with two or more children (Committee on Ways and Means, 2004).

Some states have created their own EITC and provide their residents with an additional retention of their earned income. For instance, in 2005 Wisconsin's EITC ranged from 4% of the federal EITC for families with one child to 43% of the federal EITC for families with three or more children.

Child care is another critical work support for parents of young children, especially single women. In 2004, over 62% of women with children under age six were in the labor force (U.S. Department of Labor, 2005). Limited assistance, in the form of child care subsidies exist for low-income working families. According to a research brief

from the National Center for Children in Poverty (NCCP), since PRWORA, federal and state funding for child care has significantly increased and provided monies to support an average of 2.4 million children in 2002 and 2003 (Lawrence & Kreader, 2006).

Yet a General Accounting Office (GAO) survey finds that 20 states do not serve the child care subsidy needs of all of their eligible applicants. Seventeen of these states give TANF families highest priority and other low-income families a lesser priority (U.S. GAO, 2005). Thus low-income families who have left the welfare system may face a larger challenge when seeking government aid for child care as compared to the families who remain in the TANF system.

## **DEPRESSION**

Depression is defined as feeling demoralized, worthless, hopeless, sad, and lonely. Depressed persons may feel that everything is an effort, cry, and have trouble sleeping (Mirowsky & Ross, 2003). Depression has two forms: mood and malaise. The mood aspect of depression comprises feelings while the malaise includes the physical aspects of depression such as difficulty in concentration and inertia (Mirowsky & Ross). The diagnostic criterion as set by the American Psychiatric Association (APA) requires either (a) depressed mood or (b) loss of interest or pleasure combined with (c) at least five atypical feelings during one two-week period (APA, 2000). A few examples of the atypical feelings include a major change in weight, a problem with sleeping (too little or too much), fatigue and a lack of concentration.

## **Measurement Tools**

Multiple instruments are available to diagnose either the disease of depression or the risk of depression (depressive symptomology). The common diagnostic tool for depression is the Diagnostic and Statistical Manual of Mental Disorders (DSM). Created by the APA, the DSM criteria are widely used by mental health professionals and

physicians. One goal of the DSM is to clearly define mental disorders so no overlap exists between one diagnosis and another. Thus its intent is to distinguish major depressive disorder from another subtype of depression, grief for instance.

Radloff (1977) created a survey measure for epidemiological studies, known as the Center for Epidemiologic Studies Depression Scale (CES-D Scale). It assesses feelings of guilt and worthlessness, psychomotor retardation, loss of appetite, depressed mood, feelings of helplessness and hopelessness, and sleep disturbance. The CES-D scale does not diagnose clinical depression, but has been found to be robust in identifying depressive symptomology. The scale consists of 20 questions, answered by self-report, and scored from zero to sixty with zero indicating no depressive symptoms (see Appendix A). The rate of depressive symptomology in the general population (defined as a CES-D score > 16) was found to be 21%. Radloff (1977) calls the cutoff of 16 “arbitrary”, yet it is widely used as the breakpoint to distinguish between those at risk for depression and those without a significant level of depressive symptoms.

### **Who is Depressed**

Many poverty intervention programs measure the psychological well-being of their clients. The resulting research points to several characteristics that are associated with depression including being female, living in poverty, and experiencing under-employment. Although these studies are correlational, they provide support for pursuing the question of predictive direction

***Gender differences.*** Women consistently report more psychological distress than men. Both White and African-American women were found to have a higher risk of depression than men in a large nationally-representative sample (Jones-Webb & Snowden, 1993). Analysis of about 1900 African-Americans and 1700 Whites, interviewed by the 1984 National Alcohol Survey, found that African-American women

had a 65% higher risk of depressive symptomology than African-American men while White women exhibited an 86% higher risk than White men (Jones-Webb & Snowden). Full-time employed mothers manifested more anxious and depressive symptoms than men employed full time in a cross-sectional study (Rosenfield, 1989). The author attributed this difference to the higher level of demands experienced by women who are both mothers and fully employed, as compared to fully employed men, which lead to perceptions of low personal control which, in turn, result in anxiety and depressive symptoms.

***Welfare/Poor.*** The low-income population suffers from mental health disorders at a higher rate than the non-poverty population. Baseline measures of mental distress reveal that applicants to programs which aid the poor experience depression at much higher rates than the general public. In three different samples of low-income parents, many of whom were single mothers, approximately half had significant levels of depressive symptoms. The New Chance Demonstration served AFDC women who become mothers as teens and were high-school dropouts; 53% of the applicants were at risk of depression at baseline (Quint, Bos, & Polit, 1997). Avance was a parent and child education program for families with children under three years of age; many of whom received AFDC and were single mothers. High levels of depressive symptoms were found in about half of two samples in San Antonio (Pavetti, Olson, Pindus, Pernas, & Isaacs, 1996). Among mothers in welfare programs promoting employment in California and Florida, depressive symptoms, as detected by the CES-D, existed for 44% of the sample (Fuller et al., 2000).

***Unemployment and under-employment.*** A lack of well-paying employment is associated with the likelihood of experiencing depression. Within poorer populations, not working or earning low incomes appears to put people at a risk for depression. The



risk of depression depended on a woman's welfare and work status in a sample from the Project on Devolution and Urban Change (Polit, London, & Martinez, 2001). The entire sample's percentage of those high at risk of depression was 27.2%. Yet 34.8% of those not on welfare and not working had a high risk of depression and 32.7% of those not working and on welfare were at risk. Similarly, major depression was associated with a lower likelihood of working in a study of over 4,000 men and women from the National Comorbidity Study (Ettner, Frank, & Kessler, 1997). Low-income mothers, those earning under \$20,000, had significantly higher rates of poor mental health (19%) compared to higher income mothers (15%) in the National Household Survey of Drug Abuse (NHSDA) (Jayakody & Stauffer, 2000). In addition, a significant difference was found between the percentages of women with major depression in the not-working group (12%) and the working-at-all group (8%) (Jayakody & Stauffer). A White unemployed sample was three times as likely to be at risk of depression as compared to employed Whites (Jones-Webb & Snowden, 1993). In a similar vein, employment was associated with higher perceived self-efficacy which, in turn, was negatively correlated with depressive symptoms in a sample of 188 current and former welfare receiving African-American single mothers (Jackson & Scheines, 2005).

*Possible mediators of relations between employment and depression.* When significant relations are found between two constructs, it is frequently valuable to seek potential pathways by testing mediators. For instance, employment might affect depression indirectly through its effects on income or other aspects of family life. Employment may also increase adults' social networks and improve relations with their partners and families and, in turn, lead to better mental health. Increased employment and income may also reduce stress associated with material deprivation and worry about

paying bills. Higher household income may represent a single person's higher earnings or may result from a household's increase in the number of breadwinners.

Household social support, either financial or emotional, can provide safety nets that protect one's mental health. Higher levels of social support via network members were associated with less depression, but did not mediate the negative effects of financial stress in a study of almost 600 African American respondents in the National Comorbidity Study (Lincoln, Chatters, & Taylor, 2005). Depressive symptoms were associated with a lack of social network support that could provide a private safety net (financial or in-kind support) in the National Evaluation of Welfare-to-Work Strategies (NEWWS) data (Harknett, 2006). Also, mothers with the highest level of social support worked almost one more quarter as compared to the mothers with the lowest level of social support (Harknett).

Similar associations were found between instrumental support and psychological distress. In a cross-sectional study of current and former welfare-receiving single mothers, financial strain coupled with lower educational levels predicted higher levels of depression. Additionally, instrumental support was found significantly negatively related to financial strain (Jackson, Brooks-Gunn, Huang, & Glassman, 2000). Thus, family income may be useful as both a measure of social support and financial resources. Such research may suggest that family income is a proxy for family structure because it implicitly represents the level of instrumental and social support.

One potential source of support is a partner who may provide financial and social support. Being a single mother or having a partner can affect mental health across the lifespan, but particularly during significant life transitions. The absence of a partner was found to contribute to clinical depression during pregnancy in a study of inner-city pregnant and postpartum women (Hobfoll, Ritter, Lavin, & Hulsizer, 1995). The authors

suggest explanations for the finding may be the stress of anticipating life as a single mother and the lack of protective support via a partner.

### **CAUSAL DIRECTION**

Most of this literature is cross-sectional, suggesting the ways in which employment and depression or depressive symptoms may be related. Employment may increase one's sense of control or financial status thus leading to less depression, or, conversely, the added demands of working or low levels of earnings may exacerbate mental distress. Similarly, depression may reduce one's ability to work or limit one's earning potential. Depression can affect one's level of interpersonal skills, leading to conflicts with co-workers and superiors, and can also reduce one's energy level and affect the motivation needed to both find a position and retain a job. Some longitudinal and experimental studies provide more evidence about causal directions.

### **Longitudinal and Experimental Research**

*Two methods offer ways of inferring causal relations.* Longitudinal data provide the opportunity to place mental health and economic outcomes in a temporal organization, allowing inferences about direction of effects. By manipulating policies designed to affect employment, an experiment can test the effects on mental well-being; significant differences can be attributed to the components of the variables manipulated in the experiment.

Although there are reliable associations of employment with low levels of depression, experimental tests of policies designed to increase employment among low-income single mothers show little impact on depressive symptoms. MDRC has evaluated a number of welfare-to-work and poverty reduction experiments across the country. The programs generally focused on adult economic outcomes, such as employment, earnings, income and welfare receipt. In a review of the impacts of seven experiments (five of

which are under MDRC's scope), relatively few impacts on maternal depression were found (Zaslow, 2001). The seven experiments were broken down into 18 sites and/or subgroups for analyses.

Five of the program sites/subgroups had a positive impact on depressive symptoms meaning the experimental group had higher depressive symptoms as compared to the control group. Only two of the programs' subgroups/sites were found to reduce maternal depression (Zaslow, 2001). These mixed results indicate the relation between poverty reduction experiments and depressive symptoms is not predictable.

***Depression as a predictor of earnings and work level.*** Multiple studies have shown that depression risk predicts low earnings. In a sample of 146 mothers who had children enrolled in Head Start, mothers with higher depressive symptoms at time one reported lower earnings between time one and time two as compared to mothers with lower depressive symptoms at time one (Raver, 2003).

In a study of 20 diverse welfare-to-work programs nationwide (Michalopoulos et al., 2000), subgroups were determined based on clients' answers on four questions related to depression and scaled on four points from experiencing the feeling "rarely" to "most or all days". Findings on the subgroup at high risk for depression (upon entering the studies) and access to the treatments reveal that this group experienced less earning growth than those with little risk of depression and offered the treatments. A study of the National Longitudinal Survey of Youth (NLSY) found earlier depression predictive of unemployment for a sample that was adequately employed at the earlier time (Dooley, Prause, & Ham-Rowbottom, 2000). From the above studies, it appears that a higher risk of depression leads to less earnings in select samples.

***Depression as a predictor of AFDC/TANF.*** If depression causes lower earnings and/or work levels, it should lead to an increase in welfare use. Women not on welfare

with a CES-D score of 16 or more at the onset of a study were significantly more likely (2.78 times) to enter AFDC at time two as compared to women with a CES-D under 16. This finding remained significant even after controlling for alcohol use at time one (Dooley & Prause, 2002).

***Earnings as a predictor of depression.*** Alternatively, poverty has been found to cause depression. The New Haven Epidemiologic Catchment Area Study included 3497 participants who had not experienced a psychological disorder six months prior to the onset of the data collection (Bruce, Takeuchi, & Leaf, 1990). The study's intent was to test poverty's subsequent (approximately 6 months later) psychological impact on healthy people. Even with controls for demographic variables and disorder history, poverty was still found to have an odds ratio of 2.29 for major depression versus a non-poor sample.

***AFDC/TANF as a predictor of depression.*** Aforementioned research on depression's potential to predict AFDC was not complemented by findings on the predictive quality of the reverse relationship. Studying females on AFDC at time one, Dooley and Prause (2002) did not find an association between those who left AFDC by time two and depressive symptoms after time two. There appears to be mixed findings between depressive symptoms and AFDC as evidenced by this and aforementioned studies.

Family income and work level as predictors of depressive symptoms. Employment could lead to increased earnings, and the resulting improvement in income might lead to better psychological well-being. There is evidence that changes in family income directly predict changes in maternal depressive symptoms over a three-year period (Dearing, Taylor, & McCartney, 2004). Their sample was 1351 women, from the National Institute of Child Health and Human Development Study of Early Child Care, during their first three years post-childbirth and focused on within-individual change.

The relations between changes in income and changes in depression were especially pronounced for women in low-income families. They also found evidence that women who moved out of poverty were more likely (1.48 times) to have a status shift from clinical to nonclinical depression as compared to the women who remained in poverty (Dearing et al.). Higher incomes or a shift to non-poverty incomes appear connected to lower depression.

Additional hours of work also predict lowered depressive symptoms. Raver (2003) found a mother's change in hours worked between two measurements to be marginally associated with a change in depressive symptoms. Specifically, increased work hours between time one and two were marginally associated with lowered depressive symptoms between the two measurements. Studying a reduction in work levels with the NLSY data, Dooley et al. (2000) found those with adequate jobs at time one who then experienced an adverse employment change reported significantly more depression two years later as compared to those still adequately employed.

An increase in both the mothers' and their partners' number of work hours was associated with increases in family incomes, and these higher family incomes were significantly related to decreases in depressive symptoms, leading to the conclusion that family income mediated the link between work hours and depressive symptoms (Dearing et al., 2004). Concerning work level, more hours of employment have been found to both marginally and significantly reduce depressive symptoms, sometimes via family incomes.

Family structure—having a partner or spouse—also affects family income. If a single mother enters the labor force and/or becomes less depressed, she may be more likely to form a relationship with a partner. Moreover, partners may provide support that allows mothers to work more consistently. Raver (2003) found a significant predictive relation between cohabitation and changes in a mother's level of work. Cohabitation at

time one predicted a larger increase in work hours for a mother between time one and time two.

In a Canadian longitudinal study of employment transitions, psychological distress and married status, Ali and Avison (1997) found that family income acted as a proxy for family structure. Married mothers experienced higher family incomes than single mothers because there were multiple breadwinners in the married household. Thus it is valuable to include a focus on partnering and social support when discussing family income. Cohabitation, therefore, has been associated with increased work hours and higher family incomes.

This work speaks to a stronger relation between family income and depressive symptoms than between work level and depressive symptoms. Is it work that affects mental health in this population – or is it simply added income and/or having a partner?

***Job characteristics and mental health.*** Job characteristics may also affect mental health. Employing a cross-lagged structural equation model, researchers in the Netherlands examined the directional predictive relationship between psychological well-being and job characteristics (De Jonge, Dormann, Janssen, Dollard, Landeweerd, & Nijhuis, 2001). They found that while job characteristics influenced later psychological well-being, there was only weak evidence that psychological well-being affected job characteristics. Job characteristics in this study included self-reported levels of demand, autonomy, and social support while psychological well-being measures included job satisfaction, motivation, and emotional exhaustion.

## **Research Questions**

Previous research sets the stage to study the causal directions between mental health and employment outcomes. Many past studies report associations between depression or depressive symptoms and employment variables. The research cited above points to relations between depression and earnings, work levels, AFDC, family income, and partnering.

But without defining the causal direction, we do not know if depressive symptoms are predicting employment outcomes, or if work is leading to improved or worse mental health or, indeed, if the true causal relation is bi-directional. The longitudinal research, presented above, confirms existing relations among a variety of economic, family structure, and mental health outcomes. This study further informs the predictive direction between depressive symptoms and multiple employment outcomes using a longitudinal study spanning five years for a sample of over 550 welfare and non-welfare low-income Americans. It adds to this literature by using a large low-income sample of individuals who thought they were ready to work fulltime; covering a time period of rapid change in welfare policies and employment opportunity; taking place in a state with a strong welfare-to-work policy; and measuring both economic variables and depressive symptoms across time.

Specifically, the research questions are: a) Do employment, earnings, welfare receipt, family income, and job characteristics predict changes in depressive symptoms over a three-year period? That is, do people who work more, earn more, and receive less welfare during a three-year period show more decline (or less increase) in depressive symptoms than their counterparts with less employment or earnings? Do people whose family incomes and job benefits are better show more decline (or less increase) in



depressive symptoms than do their counterparts with less income or benefits? b) Are associations of family income with depressive symptoms explained by having a partner who contributes to income? c) Do depressive symptoms predict changes in employment, earnings, welfare receipt, family income, and job characteristics over the subsequent three-year period? That is, do people with higher levels of depression show more decline (or less increase) in employment, earnings, welfare receipt, family income, and job benefits than do their counterparts with lower levels of depression?

## **Method**

### **New Hope**

New Hope was a poverty reduction program offered in Milwaukee, Wisconsin. Though the program was originally intended as a long-term work support package, due to limited funding the program lasted only three years, from 1994 through 1998. To be eligible, applicants needed residency in one of two targeted neighborhoods, to be aged 18 or older, have earnings at or below 150% of the poverty line, and to be willing to work 30 or more hours per week. Its major program components were: (a) job access – job search assistance to help participants find a position in the regular job market or else locate minimum-wage hours in a community service job; (b) earnings supplements – monthly supplements to those who worked at least 30 hours but whose household earnings remained below 200% of the poverty line; (c) health insurance – participants without health insurance were offered a plan which required contributions based on a sliding scale and subsidized by New Hope; (d) child care assistance – participants with children under age 13 and who worked at least 30 hours were offered assistance with child care expenses. Participants paid a portion of child care costs based on their income and household size while New Hope paid remaining costs; (e) staff support – a key aspect of New Hope was found to be the support from program staff.

New Hope's design was random assignment. Although control group members did not receive New Hope benefits, they could seek all services that were available via other institutions. Independent evaluations of New Hope were completed at two and five years after the program's onset. Although the design of New Hope was an experiment, the following research is non-experimental. Since depressive symptoms were not

measured at baseline, it was not possible to perform experimental analyses based on depressive symptom levels at random assignment.

## **Sample**

The sample for this research is the New Hope Child and Family Study (CFS) sample of 745 adults with children between ages one and ten at baseline. At the two-year evaluation (time 1), a total of 552 of these individuals provided survey information. At the five-year evaluation (time 2), 574 surveys were completed. Wisconsin administrative data were obtained for all 745 participants for the entire five-year period.

The parents in that sample, 89.8% of whom were women, are the focus of this research. The sample is 55% African- American, about 30% Hispanic, 12.5% White and 3.22% other. Some demographic, past earnings and assistance data were collected at baseline; more thorough data, including well-being measures, were obtained at two and five years after the onset of the program (see Figure 1). Table 1 provides descriptive characteristics of select baseline, two-year and five-year variables.

## **Measures**

**CES-D.** The indicator of depressive symptoms used in New Hope is the CES-D (see Appendix A). Published estimates of reliability have found a coefficient alpha of about .85 for the general population and .9 for a clinical sample, which speaks to the high internal consistency of the scale items (Radloff, 1977). The scale also has high concurrent validity by clinical criteria and strong evidence of construct validity. The CES-D was found able to discriminate well between general population and psychiatric inpatient samples (Radloff). The evaluation team administered the 20-item survey at the two- and five-year marks. In the New Hope sample, the two-year CES-D measure had a standardized Cronbach's alpha of 0.81 and the five-year CES-D instrument had a standardized Cronbach's alpha of 0.80.

Examples of items include: “I could not get going” and “I had trouble keeping my mind on what I was doing”. Items are scored from 0 – 3 with 0 indicating a score non-symptomatic of depression and 3 indicating depressive symptoms. An item score of zero indicates the feeling was experienced rarely or none of the time (less than 1 day) and a score of three indicates the emotion was felt most or all of the time (5-7 days) during the last week. Total scores can range from 0 to 60. A score of 16 or higher is defined as “at risk of depression.”

***Employment level.*** Administrative data from the state of Wisconsin provided information on quarters worked. A person is considered by the Unemployment Insurance (UI) system to have worked during a particular quarter if they had any reported earnings. Thus there is no distinction between people who worked the entire quarter and those who worked only one day during that quarter. A self-reported level of hours worked per week was obtained in interviews in years two and five.

***Earnings.*** The state of Wisconsin UI provided information on earnings in dollars. A self reported hourly wage level was obtained at years two and five. Using the natural log of the wages normalized the wage variables’ distributions. The natural log values of individual earnings did not have more normal distributions and thus their original values were used in the analyses.

***Non earnings income.*** The state of Wisconsin provided data for receipt of assistance, including AFDC/TANF (called AFDC in this research) and food stamps. AFDC is represented as a dummy variable: AFDC 1-4 Quarters in YR1 & YR2 (0=none; 1 = 1-4 quarters), AFDC 5-8 Quarters in YR1 & YR2 (0=none, 1 = 5-8 quarters), AFDC YR4 & YR5 (0=none; 1=any). Dummy variables were used because many people left AFDC during the study resulting in a large number of zeroes in the AFDC variable across

time. The use of dummy variables separates those who never received AFDC or left AFDC with those who continued to receive AFDC throughout the study's timeframe.

***Family income.*** A sample member's family income was obtained via year-two and year- five surveys and is in thousands of dollars. Sample members were asked to list all income sources for their immediate families – defined as the people in their households that they help to support or who help support them. The goal of the interviews was to obtain all income sources for a household including money from jobs, net income from business, rent, pensions, dividends, interest, help from W-2, other welfare, social security payments, and any other types of income.

***Partner status.*** A sample member is considered to have had a partner if the member was living with a partner. This variable was self-reported at years two and five and is represented via a dummy variable (0=not partnered, 1=partnered).

***Job characteristics.*** Changes in job quality or job benefits were tested via two separate models. Job benefits were measured with a four-item scale at both years two and five. The four items were objective job characteristics (see Appendix B). The year-five survey also contained a lengthier job quality measure which focused on subjective perceptions of quality (see Appendix B). The first model tested the change between the identical four-item scale at the two- and five-year marks while the second model tested the changes between the four-item scale at year two and the subjective job quality measure at year five.

A further note about the five-year subjective job quality and how the original set of 12 survey questions was reduced to 7. Factor analysis was employed to test how many constructs were represented by the original 12 questions. Seven questions loaded high on one factor (all loadings over .40) and had a standardized Cronbach's alpha of

0.79. The mean of these seven questions was used as the subjective job quality score (see Appendix B).

***Baseline demographic and household variables.*** Variables used as controls are: experiment/control status, race, gender, highest grade completed, number of children in household, age of participant (categorical), earnings, and the number of months of full-time work in the year before New Hope.

### **Analysis Plan**

Two sets of OLS regressions that included the assessments at two and five years after random assignment were run to test the two research questions. To test the first question—whether employment-related variables predicted changes in depression, separate regressions were conducted predicting the level of depressive symptoms at five years from each employment variable: quarters of employment, hours worked, earnings, receipt of AFDC, wages, family income, job benefits, and job quality during the interval between two and five years. Depressive symptom level at two years was controlled. That is the independent variables were predicting the residual change in depressive symptoms from two to five years.

To test whether partner status might explain the relations of income to depressive symptoms, partner status was added to the analysis predicting depressive symptoms from family income to test partnering as a mediator. Both family income and partnering at year five were tested as predictors of depressive symptoms at year five, controlling for depressive symptoms at year two.

To address the other major question—whether depressive symptoms at two years predicted changes in employment related variables, the depressive symptom score at two years was the independent variable in separate regressions predicting the employment-related variables. Because the quarters worked, earnings and AFDC measures are from

administrative data, they are available continuously across quarters; hours worked, wage rate, family income, job benefits and depressive symptoms are reported at the two and five-year surveys, so they are available at two time points (see Figure 2).

For the variables obtained from administrative data—quarters worked, earnings, and AFDC—the dependent variable was based on the eight quarters before the five-year survey (i.e., years 4 and 5). Prior levels of these variables, defined by the data from the eight quarters before the two-year survey (i.e., years 1 and 2), were included as controls. For the variables collected in the surveys—hours worked, wages, household income, and job benefits—the dependent variables were based on the five-year survey, with controls for the levels at the two-year survey. For example, analyses of income tested the relation of depressive symptoms at two years to income at five years, controlling for two-year income. In each case, therefore, the analysis indicates how depressive symptoms predicted residual change in the economic variables (see Figure 2).

In all of these analyses, therefore, when predicting a particular dependent variable, an initial measure of the dependent variable was included as a control variable. Any predictive power of the model accounts for the residual change in the dependent variable between two different times. In addition, by including an earlier measurement of the dependent variable as a control, omitted variable bias is reduced. Separate regressions were run to achieve symmetry between the research questions and, in doing so, have parallel models. The potential imbalance, if fewer regressions were run, arises from the need to look at depressive symptoms against a myriad of economic outcomes. Depressive symptomology is captured with one measure at each time point, but the corresponding economic variables total to nine measures of interest and therefore it was difficult to make parallel comparisons between models with widely different numbers of independent variables. It was thought best to run unique models for each pair of

independent and dependent variables to have symmetrical models in the belief that comparisons would be facilitated.

All analyses included the following covariates measured at the baseline survey: experiment/control status, race, gender, highest grade completed, number of children in household, age of participant, earnings and the number of months of full time work in the year before New Hope.



## Results

Pair-wise correlations for all variables are provided in tables 2 and 3. Table 2 displays the correlations between year-two and year-five predictor and dependent variables. Table 3 contains the correlations between all predictor variables and the covariates. The results of all regressions are shown in tables 4 to 11.

### **Do employment, income, and job characteristics predict changes in depressive symptoms over time?**

*Employment.* No association was found between changes in depressive symptoms over three years and the number of quarters worked between CES-D measurements (see Table 4, Model 1). The number of hours worked did predict a decrease in depressive symptoms (see Table 4, Model 2). People who worked the most at time two also had the greatest decline in depression.

*Earnings, wages, and AFDC.* Individual earnings ( $p=.10$ ) (see Table 5, Model 4) and hourly wages ( $p=.11$ ) (see Table 5, Model 5) were not significantly associated with changes in depressive symptoms over time, but there were trends in prediction. The receipt of AFDC marginally predicted an increase in depressive symptoms between years two and five (see Table 5, Model 3).

*Family income and partnering.* Higher family incomes did predict a decrease in depressive symptoms between years two and five (see Table 6, Model 6). In the model testing partnering as a mediator between family income and depressive symptoms, higher family income continued to significantly predict lower depressive symptoms but partnering was not significant. Thus having a partner did not mediate the relation (see Table 6, Model 8).

***Job characteristics.*** The four-item job benefit scale did not predict changes in depressive symptoms (see Table 7, Model 9) while an increase in the subjective job quality score did predict a decrease in depressive symptoms (see Table 7, Model 10).

**Do depressive symptoms predict changes in employment, income, and job characteristics over time?**

***Employment.*** No association was found between initial depressive symptoms and the number of quarters worked over years two and five (see Table 8, Model 12), nor did depressive symptoms predict changes in the number of hours worked (see Table 8, Model 11).

***Earnings, wages, and AFDC.*** Higher depressive symptoms at time one predicted marginal decreases in individual earnings (see Table 9, Model 15) but had no effect on hourly wages (see Table 9, Model 13). Depressive symptoms predicted an increase in AFDC receipt between years two and five (see Table 9, Model 14). People with the highest depressive symptomology at time one had the greatest increase in AFDC between time one and time two.

***Family income and partnering.*** Higher depressive symptoms predicted decreases in family incomes (see Table 10, Model 16). No effects on the likelihood of being partnered were found (see Table 10, Model 17).

***Job characteristics.*** Depressive symptoms did not predict any change in the four-item job benefit score between years two and five (see Table 11, Model 18). However, higher depressive symptoms did lead to a decrease in year-five job quality scores when controlling for the year-two four-item job benefit score (see Table 11, Model 19).

## **Discussion**

Prior research demonstrates clearly that people with high levels of depression have lower levels of employment than do those with better mental health. To better understand the association between depressive symptoms and earning power for individuals and households, models of longitudinal analyses testing time one variables as predictors of change were created to test bi-directional associations between depressive symptoms and employment outcomes.

The New Hope study captures a pivotal span of time in our country's welfare history. The low-income sample of both welfare and non-welfare Midwestern families joined an anti-poverty and work incentive program at the cusp of the 1996 welfare reform. The years 1994-2000, the time period covered in this study, were affected by the national switch from AFDC to TANF. Wisconsin, where the study took place, was one of the most aggressive states in putting welfare recipients into jobs. Thus this study addresses a time and a sample of key interest to persons interested in the effects of PRWORA as well as the researchers, policymakers, and administrators currently striving to aid today's working poor.

The New Hope study has numerous advantages that make its findings valuable additions to the existing knowledge. These plusses include its large sample size of low-income working parents, data from both administrative and survey sources, data on both individual earnings and family income, multiple data collection points both during and after the study and information on partnering.

The first hypothesis, that people who work more, earn more, have better family

incomes and job benefits, and receive less welfare show more decline (or less increase) in depressive symptoms over time than their counterparts was partially confirmed. People who worked more hours, had higher family incomes and reported better subjective job qualities at time two exhibited more decline in depressive symptoms from time one to time two as compared to people with lower levels of these economic variables. In addition, there was a trend suggesting that people with lower AFDC and higher individual earnings had lowered depressive symptoms from time one to time two. These findings are consistent with the belief that work and improved income can reduce depressive symptoms for some people and that continued reliance on cash assistance, at least in a climate pressuring people to leave it, can increase depressive symptoms.

The second hypothesis, that people with higher levels of depression will show more decline (or less increase) in employment, earnings, welfare receipt, family income, and job benefits than do their counterparts with lower levels of depression, was also partially confirmed. Individuals with lower levels of depressive symptoms at time one were more likely than those with higher levels of depressive symptoms to have reductions in AFDC, increased family incomes, and better subjective job quality over the subsequent three years. There was a trend for people with lower depressive symptoms to have greater increases in individual earnings. These findings are consistent with the hypothesis that depression can be an impediment to leaving welfare and to improving one's income and earnings.

It is noteworthy that depressive symptoms predicted later family income somewhat more consistently than they predicted individual earnings. This contrast raises questions about whether depressive symptoms have a direct effect on employment or

whether the effects on income may operate partially through other changes in people's lives that lead to improved incomes. One source of better incomes might be partners. Less depressed women might be more likely to marry or cohabit than more depressed women. Analyses designed to test this hypothesis indicated that partnering did not mediate either of the possible causal directions between lowered depressive symptoms and increased family incomes. It is possible that additional family members or non-related housemates contributed to family income in the place of, or in addition to, a romantic partner. Less depressed persons may be able to create and manage a support network of additional household members better than more depressed persons due to higher levels of interpersonal and coping skills.

The findings suggest a bi-directional relation between depressive symptoms and family income. They add to those from recent longitudinal investigation of a sample spanning the full range of family incomes that demonstrated family income to be the actual link between mental health and employment outcomes (Dearing et al., 2004). Even within the small range of income and job types that characterized this low-income sample, a similar pattern appeared.

As a more complete picture of a person's financial well-being, the negative relationship between family income and depressive symptoms may speak to a link between spending power and mental well-being. It may be that a combination of heightened household morale, lower financial stress, and more instrumental or social support in a form other than romantic partnering creates bi-directional causal relations between higher family incomes and decreased depressive symptoms.

The discrepancy between the predictive power of earnings and family income may also result from their different sources. Family income was self-reported; because it included all of the money entering a household, it may have provided a more accurate and complete representation of economic well-being of the household. Because earnings data were obtained from administrative data, they suffered the limitation that they only include earnings reported to the unemployment insurance system. Any work that is ‘off the books’ will not be included nor will EITC receipt which can be a significant source of income resulting from earnings.

Employment, as measured by work level and individual earnings, has mixed relations with depressive symptoms. There was no relation of depression to quarters worked, but the wide variation in the meaning of ‘a quarter worked’, as reported by the government, may have restricted the usefulness of the measure. High levels of reported work hours at time two did predict lowered depression, but that could have been due to increased income. Further analyses are needed to better understand the range of work hours that leads to less depressive symptoms. It may be that increasing one’s hours from part-time employment to 30-40 hours is beneficial but working over 40 hours is detrimental to mental health. Also, full-time positions are more likely than part-time work to have regular hours, be more stable, and provide benefits, which may explain the finding. More research may also help to determine mechanisms that work as mediators, such as income or self-efficacy, that further explain the relation between work hours and depressive symptoms. In an earlier study, working was found to be associated with higher perceived self-efficacy and lower levels of depressive symptoms (Jackson & Scheines, 2005). The sample in the current study might also have experienced increased self-efficacy, particularly if they received the New Hope work supports.

Initial levels of depression did not, however, predict changes in work hours. That is, people with lower depression did not increase their work hours any more than did those with high depression. The trend toward higher earnings and significant findings with higher incomes, however, suggest that the less depressed individuals may have been able to procure better positions with higher wages.

Individuals who were initially more depressed were less likely than those with lower depression to have reduced cash assistance over the next three years. There was also some tendency for those with lower levels of cash assistance during the period between times one and two to decline in depressive symptoms across the three years. These findings are consistent with the literature showing depressive symptoms predicting AFDC/TANF receipt (Dooley & Prause, 2002). Depression can lead to less employment and earnings (Michalopoulos et al., 2000; Raver, 2003), which makes it more difficult to leave cash assistance. The minority of people who were on TANF at the end of New Hope were most likely long-term welfare recipients who may have suffered from depression among a number of barriers to employment and welfare exit.

The effects of employment on psychological well-being are likely to depend partly on the characteristics of the job (De Jonge et al., 2001; Dunifon, Kalil, Bajracharya, 2005). The results of this study support that research, but because depression affects perception, mood, and morale, and the job quality measure was subjective, this relation should be labeled correlational instead of predictive. Subjective self-reported measures cannot truly be understood separately from mental well-being. The lack of relations between objective job benefits and depressive symptoms lessens the likelihood that there was a true predictive relationship between job characteristics and depressive symptoms. People probably feel better about their job when they are less

depressed and are likely to be more positive about reporting their assessment of their employment.

Overall, these findings suggest that family income is an important factor affecting changes in depressive symptoms and that it is, in turn, affected by depressive symptoms. One pathway to higher income for these low-income families is better mental health. Therefore widely-available assessments and assistance for psychological distress, especially for low-income persons, could increase household incomes. Research has begun to test the effectiveness of mental health services versus traditional human capital interventions (Lewis, Lee, & Altenbernd, 2006). Increasing individuals' mental health and, in turn, empowering persons to obtain higher household incomes is more likely to fit into our nation's belief system than is the use of public dollars to increase household incomes as a means of reducing psychological distress.

Besides mental health assistance, work supports are also vital to all working families, but are often difficult for the working poor to obtain. This research finds that both household income and work hours are related to mental health. Today's working families can best increase incomes and work levels when provided with structures which allow them to find and retain adequate employment. Our nation's stress on working over cash assistance must be embedded in policies which support working families in their quests to become self-sufficient economically.



## Appendix A: The Center for Epidemiologic Studies Depression Scale (CES-D)

DURING THE PAST WEEK:	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	0	1	2	3
2. I did not feel like eating; my appetite was poor.	0	1	2	3
3. I felt that I could not shake off the blues even with help from my family or friends.	0	1	2	3
4. I felt that I was just as good as other people.	3	2	1	0
5. I had trouble keeping my mind on what I was doing.	0	1	2	3
6. I felt depressed.	0	1	2	3
7. I felt that everything I did was an effort.	0	1	2	3
8. I felt hopeful about the future.	3	2	1	0
9. I thought my life had been a failure.	0	1	2	3
10. I felt fearful.	0	1	2	3
11. My sleep was restless.	0	1	2	3
12. I was happy.	3	2	1	0
13. I talked less than usual.	0	1	2	3
14. I felt lonely.	0	1	2	3
15. People were unfriendly.	0	1	2	3
16. I enjoyed life.	3	2	1	0
17. I had crying spells.	0	1	2	3
18. I felt sad.	0	1	2	3
19. I felt that people disliked me.	0	1	2	3
20. I could not get "going."	0	1	2	3

## Appendix B: Job Benefits and Qualities

Job Benefits – YR2 & YR5	YR2	YR5
	0 = no, 100=yes	0=no, 1=yes
Sick days with full pay?		
Paid vacation?		
A retirement or pension plan other than social security?		
<u>Any</u> type of medical insurance or health plan – whether or not you actually enrolled in it?		

### Job Qualities – YR5

1 = Not true at all, 2=Hardly ever true, 3=Sometimes true,  
4=True most of the time, 5=Always true

- a. You risk (or risked) your health or safety doing this work?\*
- b. **The job security is (or was) good, that is, you could pretty much count on having this work?**
- c. The schedule or number of hours worked each week is (was) always changing?\*
- d. **The skills you are (were) learning would be valuable for getting a better job?**
- e. **You like (liked) this job?**
- f. **You have (had) to work very hard in this position?**
- g. **The work has (had) good opportunities for promotion and advancement?**
- h. **The work is (was) flexible enough for you to keep track of your kids while at work and to handle emergencies?**
- i. **You usually get (got) a feeling of accomplishment from this work?**
- j. **The pay is (was) good for that type of work?**
- k. You often feel (felt) angry with the people at work?\*
- l. You feel (felt) drained of your energy at the end of the workday?\*

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NOTE: asterisks (\*) indicates the original item was not retained for this analysis

## Tables

Table 1: Descriptives of variables - New Hope Child and Family Study

Label	Year-2	Year-5	Baseline
CES-D	16.88 (11.35)	15.1 (10.76)	
Partner in home	27%	33%	
Wages Logged	1.93 (.32)	2.19 (.714)	
Receiving AFDC			69%
1 to 4 quarters in YR1 & YR2	32%		
5 to 8 quarters in YR1 & YR2	49%		
Any quarter YR4 & YR5		23%	
Earned Income	17416.34 (13732) YR1 & YR2	24367.19 (18667) YR4&YR5	
Family income	1621 (858)	21913.56 (16447)	
Hours Per Week Worked	37.18 (10.74)	37.27 (9.72)	
Quarters Employed	5.67 (2.62) YR 1 & YR2	5.7 (3.0) YR4 & YR5	
Job benefits	39.1 (40.1)	.65 (.40)	
Job qualities		3.7 (.83)	
No. Full Time Mos Pre-New Hope			3.56 (4.26)
Highest Grade Completed			11.13 (2.09)
Gender			
Women			90%
Race/Ethnicity			
African American			55%
Hispanic			29%
Number of Children in Household			
1			25%
2			29%
3			46%
Age Categories of participants			
18-19			5%
20-24			27%
25-34			49%
35-45			17%
45-64			2%
Earnings of Past 12 Mos. Prior to Random Assign			
None			36.38%
\$1-999			16.38%
\$1000 - 4999			23.49%
\$5000 - 9999			13.83%
\$10000 - 14999			6.71%
\$15000 or more			3.22%

NOTES: ( ) indicates standard deviation ;

n=745 for Baseline variables; YR2 & YR5 statistics are based on portion of sample that responded to survey

Table 2: Pair Wise Correlations - YR2 Predictors and YR5 Predictors

	Depressive Symptoms YR5	Quarters Worked YR4 & YR5	Hours Per Week Worked YR5	Earnings YR4 & YR5	AFDC YR4 & YR5 (1=any, 0=none)	Logged Wages YR5	Household Income YR5	Partner YR5	Job Benefits YR5	Job Quality YR5
Depressive Symptoms YR2	.50	-.04	.00	-.13	.16	-.01	-.14	-.07	-.01	-.24
Quarters Worked YR1 & YR2	-.14	.49	.11	.47	-.09	.06	.14	.09	.23	.09
Hours Per Week Worked YR2	-.10	.01	.17	.13	-.04	.05	.21	.05	.09	.03
Earnings YR1 & YR 2	-.18	.39	.20	.58	-.21	.13	.26	.15	.24	.08
AFDC 1-4 Qtrs in YR1 & YR2	-.13	.03	.06	.09	-.14	.04	.10	.07	.14	.06
AFDC 5-8 Qtrs in YR1 & YR2	.19	-.04	-.20	-.19	.31	-.03	-.21	-.11	-.15	-.05
Logged Wages YR2	-.16	.17	.04	.30	-.15	.14	.22	.07	.12	.09
Household Inc YR2	-.05	.07	.17	.17	-.14	.03	.20	.19	.07	.10
Partner YR2	-.11	.08	-.01	.07	-.12	.00	.11	.31	.00	.00
Job Benefits YR2	-.19	.25	.08	.36	-.17	.09	.22	.10	.28	.10

Table 3: Pair Wise Correlations - Predictors and Covariates

	Experiment/ Control	Highest Grade Completed	Black	Male	Hispanic	Earnings 12 Mos Pre-New Hope	No. Full Time Mos in Year Prior to Random Assign.	No. Kids in Household	Age of Parent at Random Assign.
Depressive Symptoms YR2	-.01	-.05	.03	-.06	-.04	-.13	-.10	.07	.01
Depressive Symptoms YR5	-.07	-.05	.05	-.08	-.01	-.13	-.06	.03	.07
Quarters Worked YR1 & YR2	.15	.12	.05	.01	-.04	.29	.32	.00	.04
Quarters Worked YR 4 & YR5	.03	.07	.02	-.01	-.07	.11	.10	.01	-.04
Hours Per Week Worked YR2	.04	.06	.03	.15	.00	.14	.16	-.02	.08
Hours Per Week Worked YR5	.04	.09	-.01	.05	.06	.13	.14	-.03	.01
Earnings YR1 & YR2	.09	.18	-.01	.09	.05	.40	.40	.07	.13
Earnings YR 4 & YR5	.03	.15	.00	.03	.00	.22	.22	.04	-.01
AFDC 1-4 Qtrs in YR1 & YR2	.04	.04	-.09	-.04	.05	.00	.02	-.04	.02
AFDC 5-8 Qtrs in YR1 & YR2	-.04	-.12	.11	-.22	-.10	-.29	-.33	.12	-.14
AFDC YR4 & YR5 (1=any, 0=none)	-.03	-.11	.12	-.16	-.08	-.17	-.13	.02	-.08
Logged Wages YR2	-.01	.20	-.04	.08	.06	.23	.15	.01	.05
Logged Wages YR5	.05	.09	-.03	-.05	.05	.02	.00	-.02	-.05
Household Inc YR2	-.03	.00	-.05	.07	.04	.11	.05	.16	.00
Household Inc YR5	.05	.10	-.15	.03	.13	.15	.17	-.01	-.02
Partner YR2	-.01	-.02	-.15	.11	.09	.03	.02	.05	-.02
Partner YR5	.00	-.01	-.12	.04	.10	.02	.03	.02	-.04
Job Benefits YR2	.04	.13	.04	.06	-.02	.24	.21	-.02	.03
Job Benefits YR5	-.04	.17	.00	-.08	.06	.10	.10	-.04	-.07
Job Quality YR5	-.03	.15	-.01	-.02	.02	.07	.04	.03	-.05

Table 4: Quarters and Hours Worked as Predictors of Depressive Symptoms

Variable	Depressive Symptoms Year 5 MODEL 1			Depressive Symptoms Year 5 MODEL 2		
	B	SE B	$\beta$	B	SE B	$\beta$
Intercept	7.23	3.44	0.00	9.75	3.67	0.00
Quarters Worked YR 4 & YR5 (0-8)	-0.13	0.16	-0.03	-	-	-
Hours Per Week Worked YR5	-	-	-	-0.10	0.05	-0.09 *
Depressive Symptoms YR2 (0-60)	0.46	0.04	0.48 ***	0.45	0.04	0.48 ***
Experiment/Control (1=E, 0=C)	-0.95	0.86	-0.04	-1.14	0.88	-0.05
Highest Grade Completed	-0.01	0.22	0.00	-0.09	0.23	-0.02
Black	2.25	1.20	0.10 +	2.82	1.27	0.13 *
Hispanic	1.43	1.34	0.06	2.80	1.42	0.12 *
Male	-2.68	1.65	-0.07	-2.68	1.74	-0.07
Earnings 12 Mos Pre-New Hope <sup>1</sup>	-1.24	0.49	-0.17 *	-0.76	0.50	-0.11
No. Full Time Mos in Year Prior to Random Assign.	0.21	0.16	0.08	0.13	0.17	0.05
No. Kids in Household	-0.67	0.57	-0.05	-0.37	0.59	-0.03
Age of Parent at Random Assign. <sup>2</sup>	1.27	0.53	0.10 *	0.87	0.55	0.07
R <sup>2</sup>		0.28			0.28	
F-Value		16.48			14.31	
N		474			420	

Notes: Statistical significance levels are indicated as \*\*\* = .1 percent, \*\* = 1 percent, \* = 5 percent, and + = 10 percent.

<sup>1</sup> Categories of earnings: 1 = none; 2 = \$1-999; 3 = \$1000 - 4999; 4 = \$5000 - 9999; 5 = \$10000 - 14999; 6,7 = \$15000 or more

<sup>2</sup> Categories of age: 1 = 18 < 20; 2 = 20 < 25; 3 = 25 < 35; 4 = 35 < 45; 6 = 45 < 55 ; 7 = 55+

Table 5: Earnings, Wages and AFDC as Predictors of Depressive Symptoms

Variable	Depressive Symptoms Year 5 MODEL 3			Depressive Symptoms Year 5 MODEL 4			Depressive Symptoms Year 5 MODEL 5		
	B	SE B	β	B	SE B	β	B	SE B	β
Intercept	5.43	3.33	0.11	6.86	3.29	0.00	8.39	3.59	0.00
AFDC YR4 & YR5 (1=any, 0=none)	1.96	1.04	0.08 +	-	-	-	-	-	-
Earnings YR4 & YR5	-	-	-	0.00	0.00	-0.07	-	-	-
Logged Wages YR5	-	-	-	-	-	-	-1.01	0.64	-0.07
Depressive Symptoms YR2 (0-60)	0.45	0.04	0.00 ***	0.46	0.04	0.47 ***	0.45	0.04	0.48 ***
Experiment/Control (1=E, 0=C)	-0.91	0.86	0.47	-0.90	0.86	-0.04	-0.81	0.90	-0.04
Highest Grade Completed	0.02	0.22		0.04	0.22	0.01	-0.13	0.23	-0.03
Black	2.03	1.20	0.00 +	2.23	1.20	0.10 +	2.50	1.29	0.12 +
Hispanic	1.57	1.34	-0.06	1.58	1.34	0.06	2.33	1.44	0.10
Male	-2.43	1.65	0.09	-2.54	1.65	-0.06	-3.42	1.83	-0.08 +
Earnings 12 Mos Pre-New Hope <sup>1</sup>	-1.20	0.49	0.06 *	-1.21	0.49	-0.16 *	-0.73	0.51	-0.10
No. Full Time Mos in Year Prior to Random Assign.	0.21	0.16	-0.16	0.22	0.16	0.09	0.11	0.17	0.04
No. Kids in Household	-0.64	0.57		-0.62	0.57	-0.05	-0.10	0.61	-0.01
Age of Parent at Random Assign. <sup>2</sup>	1.34	0.53	-0.05 *	1.22	0.53	0.10 *	0.77	0.56	0.07
R <sup>2</sup>		0.29			0.29			0.28	
F-Value		16.85			16.74			14.08	
N		474			474			409	

Notes: Statistical significance levels are indicated as \*\*\* = .1 percent, \*\* = 1 percent, \* = 5 percent, and + = 10 percent.

<sup>1</sup> Categories of earnings: 1 = none; 2 = \$1-999; 3 = \$1000 - 4999; 4 = \$5000 - 9999; 5 = \$10000 - 14999; 6,7 = \$15000 or more

<sup>2</sup> Categories of age: 1 = 18 < 20; 2 = 20 < 25; 3 = 25 < 35; 4 = 35 < 45; 6 = 45 < 55 ; 7 = 55+

Table 6: Household Income and Partnering as Predictors of Depressive Symptoms

Variable	Depressive Symptoms Year 5			Depressive Symptoms Year 5			Depressive Symptoms Year 5		
	B	SE B	$\beta$	B	SE B	$\beta$	B	SE B	$\beta$
Intercept	7.24	3.49	0.00	7.46	3.34	0.00	7.26	3.54	0.00
Household Income YR5 (in 000s)	-0.12	0.03	-0.17 ***	-	-	-	-0.12	0.03	-0.17 ***
Partner YR5 (0=not partnered; 1=partnered)	-	-	-	-1.41738	0.88268	-0.06495	-0.04	0.97	0.00
Depressive Symptoms YR2 (0-60)	0.42	0.04	0.44 ***	0.46	0.04	0.48 ***	0.42	0.04	0.44 ***
Experiment/Control (1=E, 0=C)	-0.91	0.87	-0.04	-1.04	0.86	-0.05	-0.91	0.88	-0.04
Highest Grade Completed	0.08	0.23	0.01	-0.03	0.22	-0.01	0.08	0.23	0.01
Black	1.59	1.25	0.08	2.09	1.20	0.10 +	1.59	1.25	0.08
Hispanic	2.00	1.38	0.08	1.56	1.34	0.06	2.00	1.39	0.08
Male	-3.58	1.70	-0.09 *	-2.52	1.65	-0.06	-3.57	1.71	-0.09 *
Earnings 12 Mos Pre-New Hope <sup>1</sup>	-0.75	0.50	-0.10	-1.23	0.49	-0.17 *	-0.75	0.50	-0.10
No. Full Time Mos in Year Prior to Random Assign.	0.15	0.16	0.06	0.19	0.16	0.08	0.15	0.16	0.06
No. Kids in Household	-0.27	0.59	-0.02	-0.67	0.57	-0.05	-0.27	0.59	-0.02
Age of Parent at Random Assign. <sup>2</sup>	1.16	0.53	0.10 *	1.25	0.53	0.10 *	1.16	0.53	0.10 *
R <sup>2</sup>		0.28			0.28			0.28	
Change in R <sup>2</sup>								0.00	
F-Value		14.87			16.73			13.60	
N		433			474			433	

Notes: Statistical significance levels are indicated as \*\*\* = .1 percent, \*\* = 1 percent, \* = 5 percent, and + = 10 percent.

<sup>1</sup> Categories of earnings: 1 = none; 2 = \$1-999; 3 = \$1000 - 4999; 4 = \$5000 - 9999; 5 = \$10000 - 14999; 6,7 = \$15000 or more

<sup>2</sup> Categories of age: 1 = 18 < 20; 2 = 20 < 25; 3 = 25 < 35; 4 = 35 < 45; 6 = 45 < 55; 7 = 55+



Table 7: Job Benefits and Qualities as Predictors of Depressive Symptoms

Variable	Depressive Symptoms Year 5			Depressive Symptoms Year 5		
	MODEL 9			MODEL 10		
	B	SE B	$\beta$	B	SE B	$\beta$
Intercept	6.71	3.41	0.00	14.23	3.89	0.00
Job Benefits YR5	-1.84	1.18	-0.07	-	-	-
Job Quality YR5	-	-	-	-2.20	0.57	-0.17 ***
Depressive Symptoms YR2 (0-60)	0.45	0.04	0.48 ***	0.42	0.04	0.44 ***
Experiment/Control (1=E, 0=C)	-1.42	0.90	-0.07	-1.24	0.88	-0.06
Highest Grade Completed	-0.05	0.23	-0.01	-0.02	0.24	0.00
Black	2.85	1.27	0.14 *	2.65	1.27	0.13 *
Hispanic	2.90	1.42	0.12 *	2.43	1.41	0.10 +
Male	-3.55	1.76	-0.09 *	-3.02	1.69	-0.08 +
Earnings 12 Mos Pre-New Hope <sup>1</sup>	-1.00	0.51	-0.14 +	-0.86	0.50	-0.12 +
No. Full Time Mos in Year Prior to Random Assign.	0.22	0.17	0.09	0.13	0.16	0.06
No. Kids in Household	-0.31	0.60	-0.02	-0.23	0.59	-0.02
Age of Parent at Random Assign. <sup>2</sup>	0.94	0.56	0.08 +	0.86	0.55	0.07
R <sup>2</sup>		0.28			0.30	
F-Value		14.07			15.57	
N		406			408	

Notes: Statistical significance levels are indicated as \*\*\* = .1 percent, \*\* = 1 percent, \* = 5 percent, and + = 10 percent.

<sup>1</sup> Categories of earnings: 1 = none; 2 = \$1-999; 3 = \$1000 - 4999; 4 = \$5000 - 9999; 5 = \$10000 - 14999; 6,7 = \$15000 or more

<sup>2</sup> Categories of age: 1 = 18 < 20; 2 = 20 < 25; 3 = 25 < 35; 4 = 35 < 45; 6 = 45 < 55; 7 = 55+

Table 8: Depressive Symptoms as Predictor of Hours and Quarters Worked

Variable	Hours Per Week Worked YR5			Quarters Worked YR4 & YR5 (0-8)		
	MODEL 11			MODEL 12		
	B	SE B	ß	B	SE B	ß
Intercept	28.16	3.89	0.00	4.19	0.80	0.00
Depressive Symptoms YR2 (0-60)	0.04	0.04	0.05	0.00	0.01	0.00
Hours Per Week Worked YR2	0.17	0.05	0.18 ***	-	-	-
Quarters Worked YR1 & YR2 (0-8)	-	-	-	0.56	0.04	0.51 ***
Experiment/Control (1=E, 0=C)	-0.37	0.94	-0.02	-0.21	0.21	-0.04
Highest Grade Completed	0.23	0.24	0.05	-0.03	0.05	-0.02
Black	0.69	1.36	0.04	-0.45	0.29	-0.08
Hispanic	2.49	1.51	0.12 +	-0.28	0.32	-0.04
Male	0.07	1.84	0.00	0.11	0.40	0.01
Earnings 12 Mos Pre-New Hope <sup>1</sup>	0.11	0.53	0.02	0.06	0.12	0.03
No. Full Time Mos in Year Prior to Random Assign.	0.15	0.18	0.07	-0.07	0.04	-0.11 +
No. Kids in Household	-0.11	0.63	-0.01	0.04	0.14	0.01
Age of Parent at Random Assign. <sup>2</sup>	-0.65	0.59	-0.06	-0.27	0.13	-0.08 *
R <sup>2</sup>		0.05			0.24	
F-Value		2.1			16.07	
N		410			572	

Notes: Statistical significance levels are indicated as \*\*\* = .1 percent, \*\* = 1 percent, \* = 5 percent, and + = 10 percent.

<sup>1</sup> Categories of earnings: 1 = none; 2 = \$1-999; 3 = \$1000 - 4999; 4 = \$5000 - 9999; 5 = \$10000 - 14999; 6,7 = \$15000 or more

<sup>2</sup> Categories of age: 1 = 18 < 20; 2 = 20 < 25; 3 = 25 < 35; 4 = 35 < 45; 6 = 45 < 55 ; 7 = 55+

Table 9: Depressive Symptoms as Predictor of Earnings, Wages and AFDC

Variable	Logged Wages YR5			AFDC YR4 & YR5 (1=any, 0=none)			Earnings YR 4 & YR 5		
	MODEL 13			MODEL 14			MODEL 15		
	B	SE B	β	B	SE B	Odds Ratio	B	SE B	β
Intercept	1.31	0.34	0.00	-2.29	1.05	-	18946.00	4799.98	0.00
Depressive Symptoms YR2 (0-60)	0.00	0.00	0.00	0.03	0.01	1.03 **	-106.78	55.88	-0.07 +
Logged Wages YR2	0.31	0.13	0.12 *	-	-	-	-	-	-
AFDC 1-4 Qtrs in YR1 & YR2	-	-	-	1.55	0.64	4.71	-	-	-
AFDC 5-8 Qtrs in YR1 & YR2	-	-	-	2.75	0.63	15.58	-	-	-
Earnings YR1 & YR 2	-	-	-	-	-	-	0.78	0.05	0.58 ***
Experiment/Control (1=E, 0=C)	0.05	0.07	0.03	-0.11	0.21	0.90	-202.12	1269.77	-0.01
Highest Grade Completed	0.03	0.02	0.08	-0.07	0.06	0.93	302.52	329.64	0.03
Black	0.05	0.11	0.04	0.62	0.31	1.85	-1606.74	1764.20	-0.04
Hispanic	0.14	0.12	0.08	-0.18	0.36	0.83	-231.33	1947.68	-0.01
Male	-0.22	0.15	-0.08	-0.98	0.66	0.38	302.67	2431.69	0.00
Earnings 12 Mos Pre-New Hope <sup>1</sup>	0.03	0.04	0.05	-0.29	0.14	0.75	-482.25	743.65	-0.04
No. Full Time Mos in Year Prior to Random Assign.	-0.01	0.01	-0.08	0.07	0.05	1.07	-49.04	242.17	-0.01
No. Kids in Household	0.00	0.05	0.00	-0.24	0.14	0.79	197.06	833.56	0.01
Age of Parent at Random Assign. <sup>2</sup>	-0.05	0.05	-0.05	0.01	0.14	1.01	-2585.15	785.97	-0.12 **
R <sup>2</sup>		0.04						0.33	
F-Value		1.6 +						25.58	
N		399			572			572	

Notes: Statistical significance levels are indicated as \*\*\* = .1 percent, \*\* = 1 percent, \* = 5 percent, and + = 10 percent.

<sup>1</sup> Categories of earnings: 1 = none; 2 = \$1-999; 3 = \$1000 - 4999; 4 = \$5000 - 9999; 5 = \$10000 - 14999; 6,7 = \$15000 or more

<sup>2</sup> Categories of age: 1 = 18 < 20; 2 = 20 < 25; 3 = 25 < 35; 4 = 35 < 45; 6 = 45 < 55 ; 7 = 55+

Table 10: Depressive Symptoms as Predictor of Household Income and Partnering

Variable	Household Income YR5 (000s)			Partner YR5 (0=not partnered; 1=partnered)		
	MODEL 16			MODEL 17		
	B	SE B	$\beta$	B	SE B	$\beta$
Intercept	5.82	5.68	0.00	0.40	0.15	0.00
Depressive Symptoms YR2 (0-60)	-0.15	0.06	-0.11 *	0.00	0.00	-0.05
Household Income YR2 (000s)	3.11	0.81	0.18 ***	-	-	-
Partner YR2 (0=not partnered; 1=partnered)	-	-	-	0.31	0.04	0.31 ***
Experiment/Control (1=E, 0=C)	1.13	1.41	0.04	-0.02	0.04	-0.02
Highest Grade Completed	1.06	0.37	0.14 **	-0.01	0.01	-0.03
Black	-5.07	2.01	-0.16 *	-0.03	0.05	-0.03
Hispanic	2.32	2.22	0.07	0.07	0.06	0.07
Male	-3.05	2.81	-0.05	0.03	0.07	0.02
Earnings 12 Mos Pre-New Hope <sup>1</sup>	0.41	0.82	0.04	0.02	0.02	0.05
No. Full Time Mos in Year Prior to Random Assign.	0.37	0.27	0.10	-0.01	0.01	-0.07
No. Kids in Household	0.95	0.96	0.05	0.01	0.03	0.02
Age of Parent at Random Assign. <sup>2</sup>	-0.51	0.86	-0.03	-0.03	0.02	-0.05
R <sup>2</sup>		0.13			0.13	
F-Value		5.65			7.38	
N		434			572	

Notes: Statistical significance levels are indicated as \*\*\* = .1 percent, \*\* = 1 percent, \* = 5 percent, and + = 10 percent.

<sup>1</sup> Categories of earnings: 1 = none; 2 = \$1-999; 3 = \$1000 - 4999; 4 = \$5000 - 9999; 5 = \$10000 - 14999; 6,7 = \$15000 or more

<sup>2</sup> Categories of age: 1 = 18 < 20; 2 = 20 < 25; 3 = 25 < 35; 4 = 35 < 45; 6 = 45 < 55 ; 7 = 55+

Table 11: Depressive Symptoms as Predictor of Job Benefits and Qualities

Variable	Job Benefits YR5 MODEL 18			Job Quality YR5 MODEL 19		
	B	SE B	$\beta$	B	SE B	$\beta$
Intercept	0.26	0.14	0.00	2.90	0.32	0.00
Depressive Symptoms YR2 (0-60)	0.00	0.00	0.04	-0.02	0.00	-0.21 ***
Job Benefits YR2	0.00	0.00	0.29 ***	0.00	0.00	0.06
Experiment/Control (1=E, 0=C)	-0.07	0.04	-0.09 +	-0.06	0.08	-0.04
Highest Grade Completed	0.03	0.01	0.15 **	0.09	0.02	0.21 ***
Black	0.05	0.05	0.06	-0.07	0.11	-0.04
Hispanic	0.12	0.06	0.14 *	0.09	0.13	0.05
Male	-0.15	0.07	-0.10 *	0.05	0.15	0.01
Earnings 12 Mos Pre-New Hope <sup>1</sup>	0.01	0.02	0.03	0.01	0.04	0.02
No. Full Time Mos in Year Prior to Random Assign.	0.00	0.01	0.00	-0.01	0.01	-0.04
No. Kids in Household	-0.03	0.02	-0.05	0.07	0.05	0.06
Age of Parent at Random Assign. <sup>2</sup>	-0.02	0.02	-0.04	-0.03	0.05	-0.04
R <sup>2</sup>		0.14			0.11	
F-Value		5.95			4.29	
N		411			405	

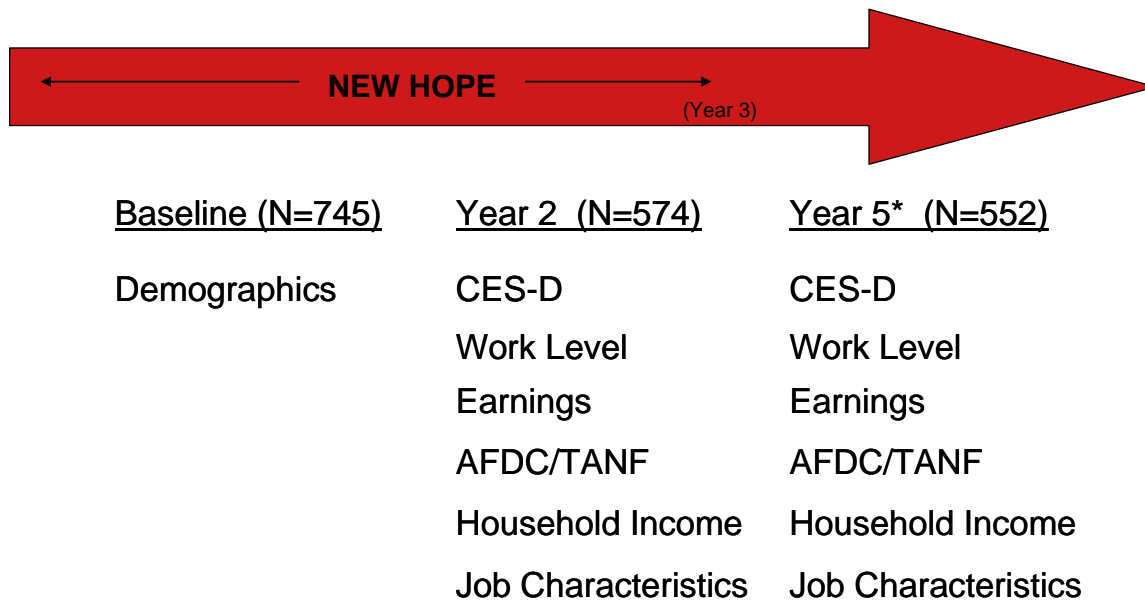
Notes: Statistical significance levels are indicated as \*\*\* = .1 percent, \*\* = 1 percent, \* = 5 percent, and + = 10 percent.

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<sup>2</sup> Categories of age: 1 = 18 < 20; 2 = 20 < 25; 3 = 25 < 35; 4 = 35 < 45; 6 = 45 < 55 ; 7 = 55+

## Figures

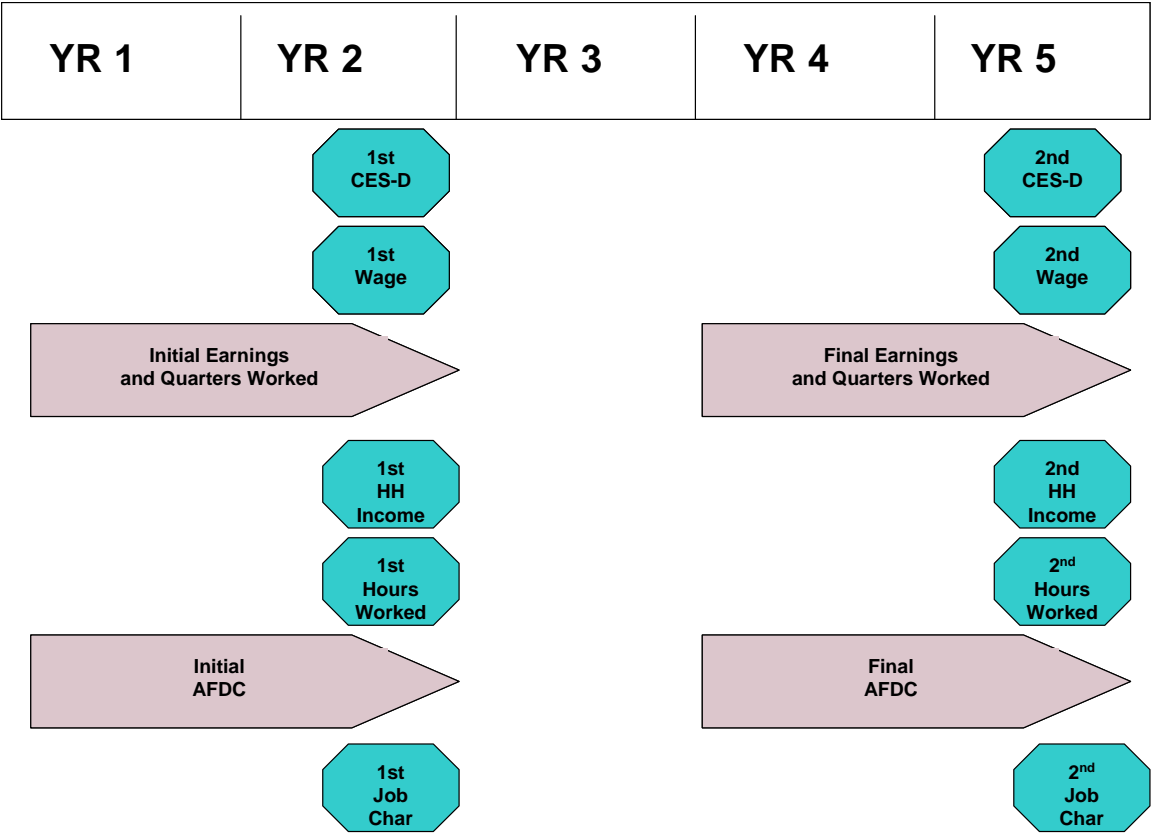
Figure 1: Five years of New Hope Data Collection



\* note: Year 5 data was obtained 2 years after New Hope ended

Figure 2: Timeline of Data Used

(arrows represent administrative data, octagons represent survey data)



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